



Great Lakes Navigation

O&M Five Year Development Perspective

Great Lakes Navigation Stakeholder Meeting

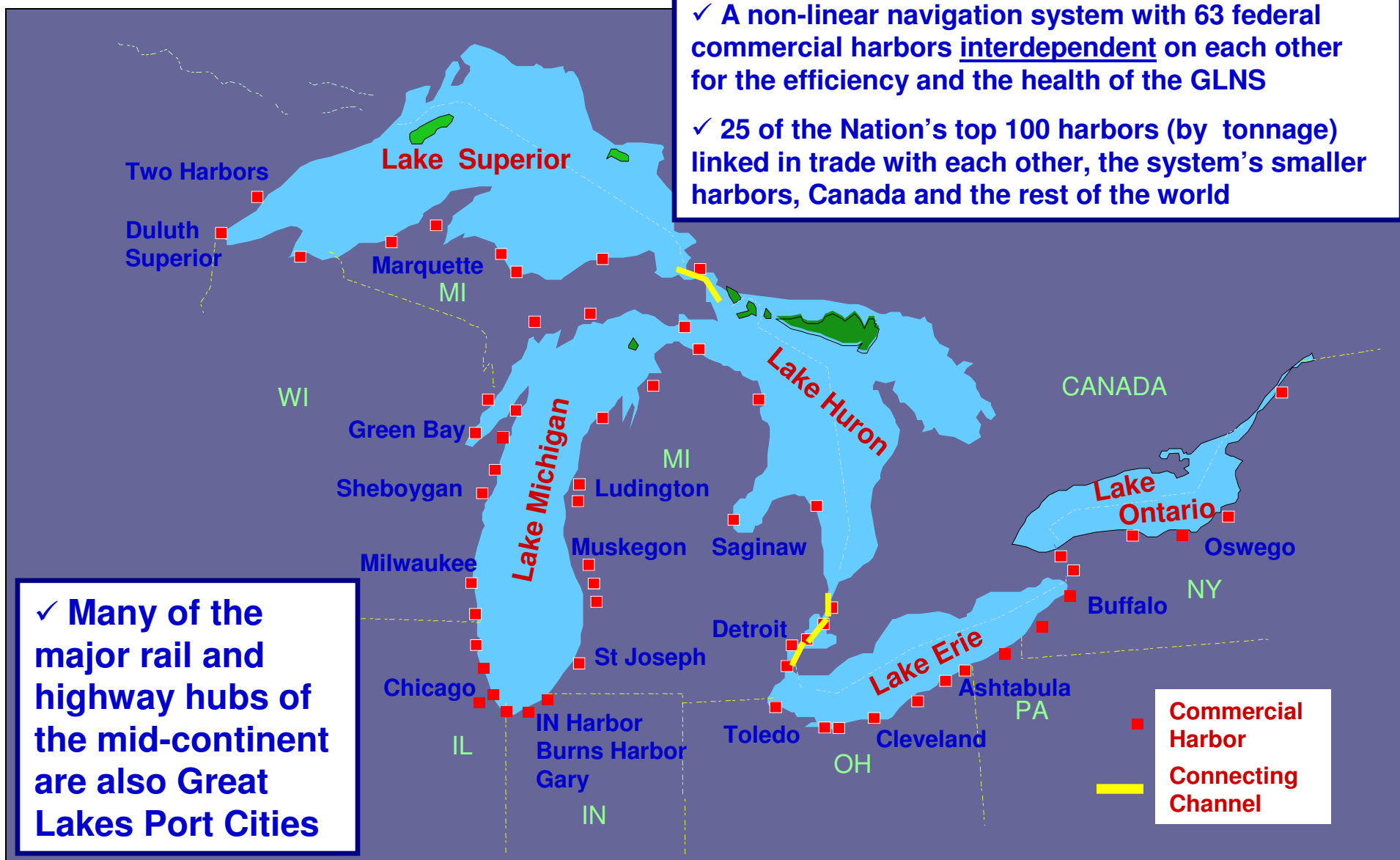
November 27, 2007



Light Loading

Great Lakes Navigation System (GLNS)

- ✓ A non-linear navigation system with 63 federal commercial harbors interdependent on each other for the efficiency and the health of the GLNS
- ✓ 25 of the Nation's top 100 harbors (by tonnage) linked in trade with each other, the system's smaller harbors, Canada and the rest of the world





Current Situation

Great Lakes Navigation



O&M on the Great Lakes is under-funded:

- Large dredging backlog at commercial harbors
- At current funding levels the backlog will continue to grow
- Navigation structure (breakwaters) failures are beginning
- System-wide regular reinvestment in breakwaters must begin
- To maintain the ability to dredge we must begin construction of several CDFs and initiate several DMMPs



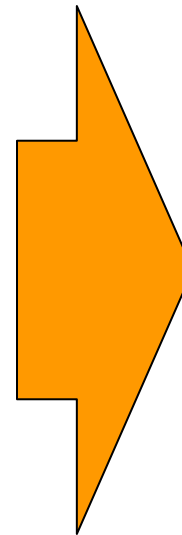
Great Lakes Navigation

Vital to the Nation's Economy & Security



- ✓ Annually **160 million tons** are transported on the Great Lakes
- ✓ **44,000 Jobs** are directly related to maritime transport (ports, shippers, longshoremen, etc.)
- ✓ **138,000 Steel Industry Jobs** are dependent on the GLNS
- ✓ **54,400 Mining Jobs** are dependent on the GLNS

Iron Ore/Steel products (68.2 M tons)
Coal (41.4 M tons)
Petro. Products & Crude (45.9 M tons)
Aggregates (50.3 M tons)
Other Ores (8.9 M tons)
Grain (4.9 M tons)
Chemicals (4.0 M tons)
Other Commodities (12 M tons)



Drives

The Nation's Primary
Steel Production

The Region's Electrical
Power

Regional Manufacturing

Construction

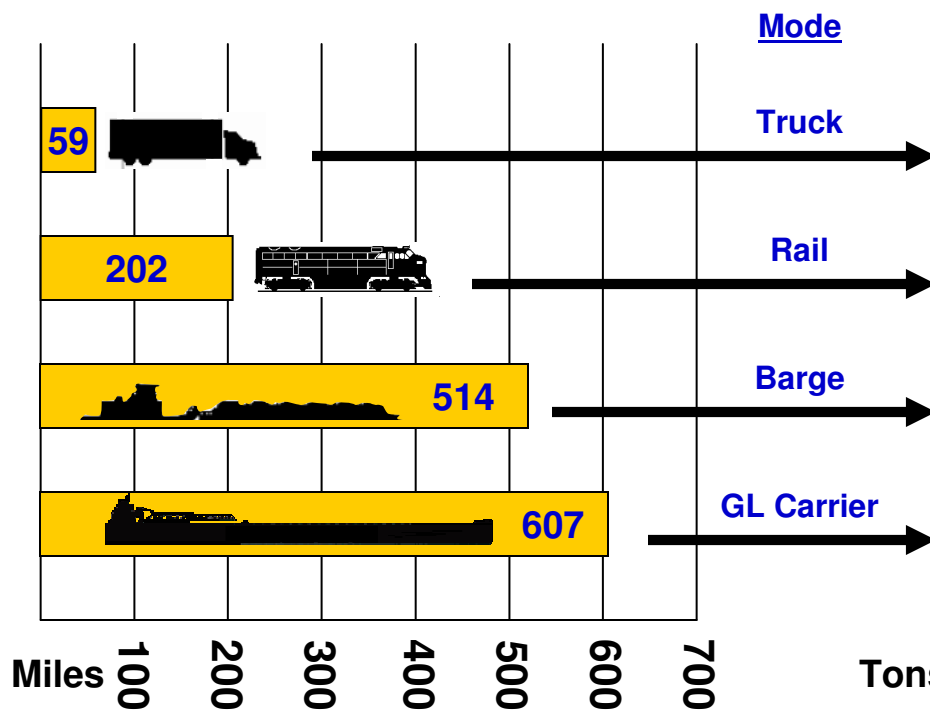
Farming

Coal and Ore Mining

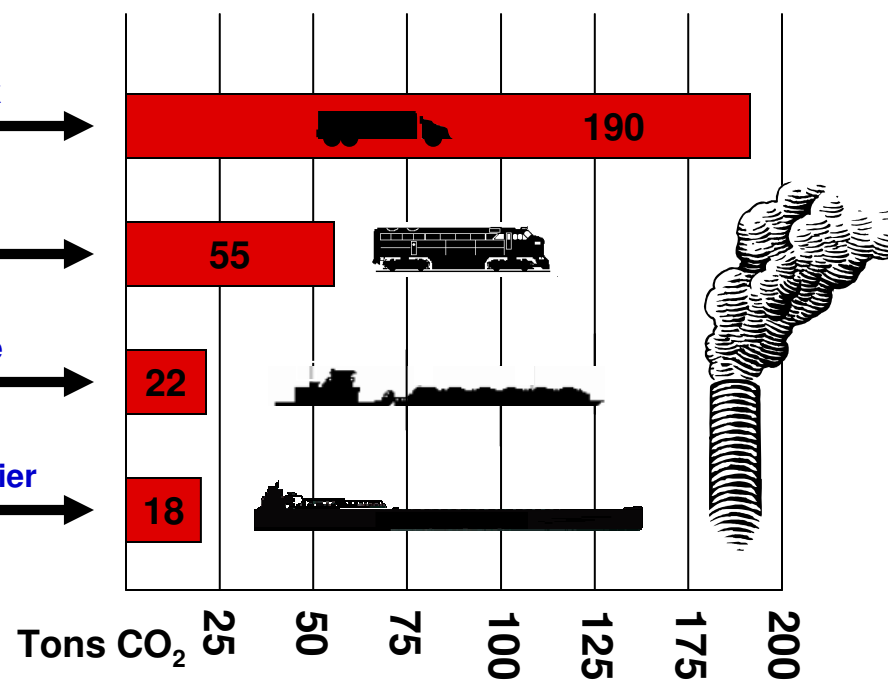
Fuel Efficiency & Environmental Impact

Great Lakes Navigation

Miles One Ton of Cargo can be
Carried per Gallon of Fuel¹



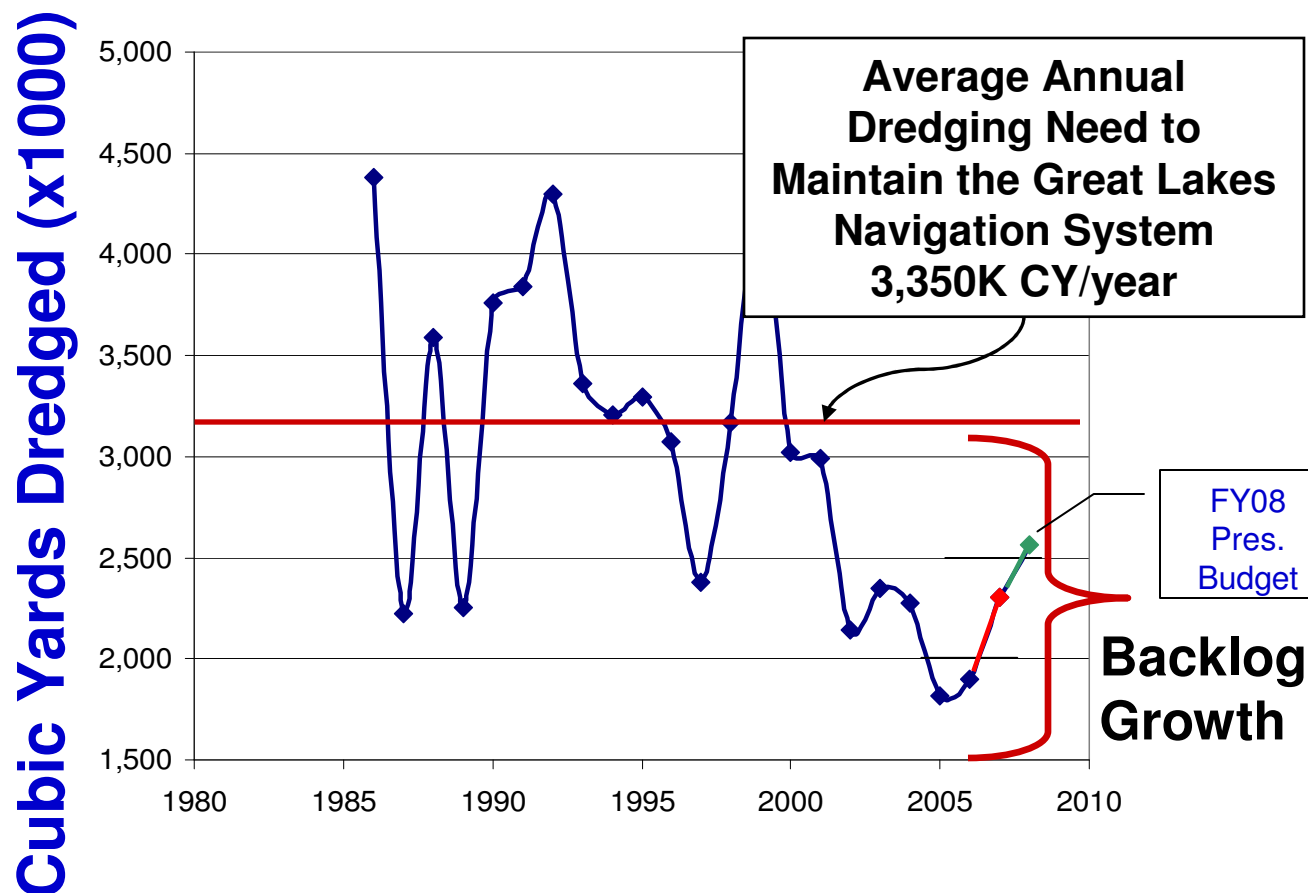
Tons of Carbon Dioxide (CO₂)
Produced to Transport 1000 Tons
of Bulk Cargo 1000 Miles²



1. Source: USDOT Maritime Administration and Minnesota Department of Transportation
2. Assumes US DOE Fuel and Energy Emission Coefficient of 22.38 lbs of CO₂ per gallon (No.1,2,4 Fuel Oils and Diesel)

Great Lakes Dredging

Annual Great Lakes Dredging 1986-2006



Great Lake	Annually Required (x1000)
Superior	250 CY
Michigan	900 CY
Huron	235 CY
Erie	1,650 CY
Ontario	45 CY
Connecting Channels	270 CY
Total	3,350 CY

Funding
System wide average \$12 per cubic yard
Annual Need:
<u>\$40,200K</u>

- ✓ Based on a multi-year running average. Not all harbors are dredged annually
- ✓ \$12 per yard cost estimate is in FY09 dollars



Backlog Removal Dredging

Great Lakes Navigation



Backlog Dredging Needed to Remove the Backlog from FY09 to FY13 (in addition to the annual dredging need)

Fiscal Year	Backlog need (x1000)	Required Funding (x1000)	Required Funding
FY 2009	4,320 CY	\$51,840	System wide average \$12 (FY09) per cubic yard (adjusted to future FY dollars) Note: The total is a sum of different FY adjusted dollar levels
FY 2010	3,457 CY	\$42,355	
FY 2011	3,457 CY	\$43,245	
FY 2012	3,457 CY	\$44,153	
FY 2013	2,592 CY	\$33,800	
Total	17,283 CY	\$215,393	

Includes all Great Lakes commercial harbors and connecting channels

Confined Disposal Facility Priorities

Great Lakes Navigation System DMMP & CDF needs through FY13

- ✓ Does not include regular O&M at active CDFs
- ✓ Previously funded under Construction General



Priority CDF Construction & DMMPs, (x1,000)

Harbor	FY09	FY10	FY11	FY12	FY13
Calumet Harbor Interim CDF	\$271	\$3,087	\$2,608	-	-
Cleveland Harbor New CDF	\$417	\$532	\$65,201	\$66,570	\$67,968
Milwaukee Harbor CDF	\$3,570	\$612	-	-	-
Green Bay Harbor DMMP/CDF	\$192	\$2,927	\$7,335	-	-
Renard Island Closure	\$991	\$958	\$815	-	-
Ashtabula Harbor DMMP	\$275	\$288	\$302	-	-
Lorain Harbor DMMP	\$220	-	-	-	-
Lorain Harbor New CDF	\$709	\$718	\$190	\$12,204	\$12,461
Indiana Harbor CDF	\$19,528	-	-	-	-
System Totals	\$26,173	\$9,122	\$76,541	\$78,774	\$80,429

Breakwaters

Great Lakes Navigation



- 140+ miles of breakwaters on the Great Lakes
- Most built between 1860 and 1940; timber crib const.
- Low water levels are accelerating deterioration
- Funding for preventive maintenance (\$7.5M a year) and rehabilitation (\$5-7M a year) is needed



Great Lakes Navigation System Needs (FY09-FY13)



FY	Annual Maint. Dredging (x1000)	Backlog Removal Dredging (x1000)	DREDGING TOTAL (x1000)	CDFs & DMMPs (x1000)	Breakwater Prev. Maint. & Rehab. (x1000)	Soo Locks ReCap (x1000)	Other Navigation O&M Costs (x1000)	Total System O&M Need (x1000)
FY09	\$40,200	\$51,840	\$92,040	\$26,172	\$13,755	\$10,986	\$39,300	\$182,253
FY10	\$41,044	\$42,355	\$83,399	\$9,123	\$14,369	\$13,629	\$40,100	\$160,620
FY11	\$41,906	\$43,245	\$85,151	\$76,452	\$14,670	\$12,737	\$41,000	\$230,010
FY12	\$42,786	\$44,153	\$86,939	\$78,774	\$14,978	\$15,155	\$41,800	\$237,646
FY13	\$43,684	\$33,800	\$77,484	\$80,428	\$15,293	complete	\$42,700	\$215,905

- ✓ Restores the commercial harbors to a functional condition by FY2013 (removes the *Dredging Backlog*)
- ✓ Funds CDFs and DMMPs required to support the systems dredging
- ✓ Begins a critical reinvestment into the system's breakwaters which will be further developed under a formal asset management process
- ✓ Maintains the system's connecting channels and the locks
- ✓ Totals do not include dredging or structure maintenance of shallow draft harbors

Updating the Great Lakes FYDP

Updates are performed annually for several reasons:

- ✓ Project needs change - needs are reassessed annually
- ✓ Plan must be adjusted to address the funding realities of the previous budget year
- ✓ Backlog removal plan may need to be extended beyond 2013 –

progress is good!

- ✓ ***Grading ourselves***





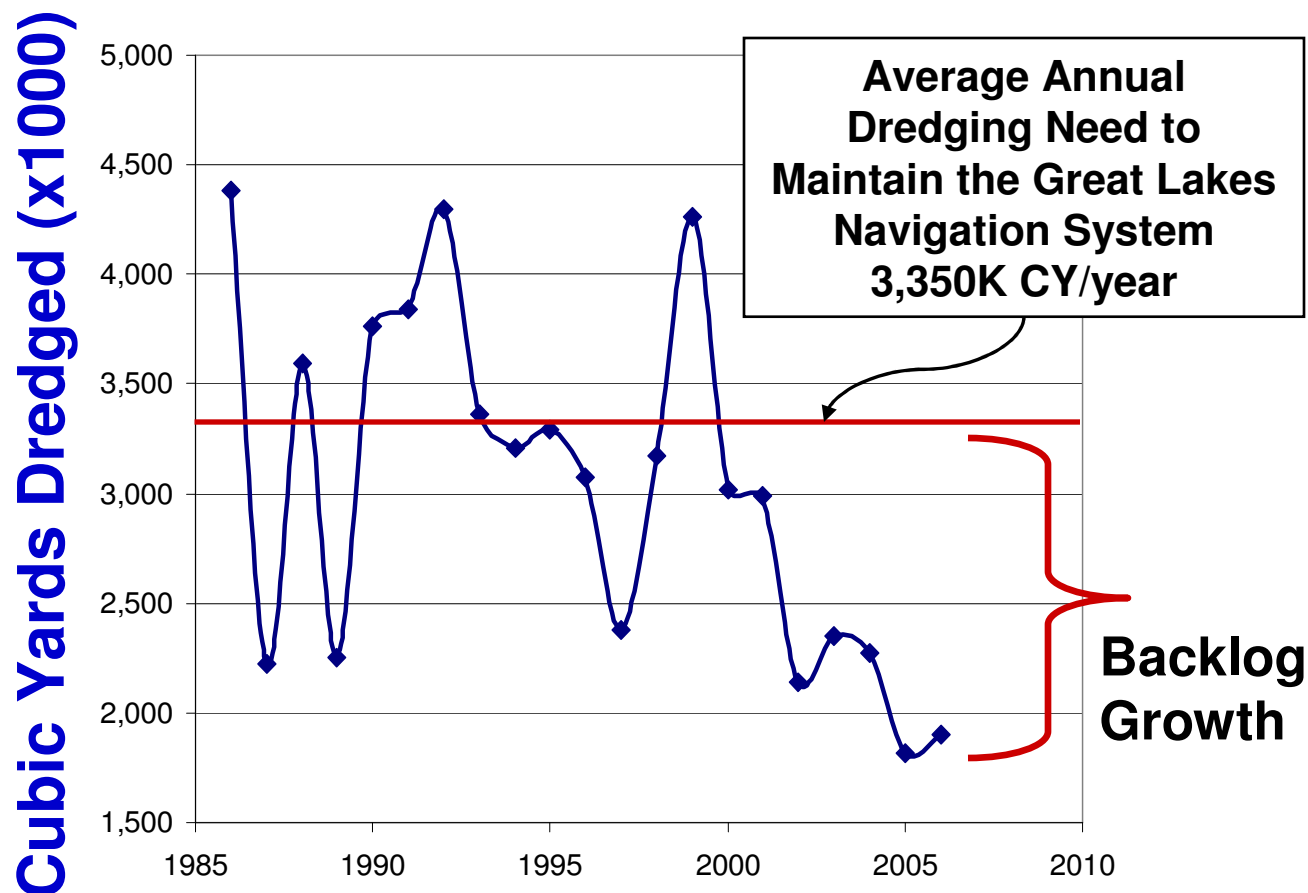
Great Lakes Navigation



Questions

Great Lakes Dredging

Annual Great Lakes Dredging 1986-2006



Great Lake	Annually Required (x1000)
Superior	250 CY
Michigan	900 CY
Huron	235 CY
Erie	1,650 CY
Ontario	45 CY
Connecting Channels	270 CY
Total	3,350 CY

Funding
System wide average \$12 per cubic yard
Annual Need: <u>\$40,200K</u>

- ✓ Based on a multi-year running average. Not all harbors are dredged annually
- ✓ \$12 per yard cost estimate is in FY09 dollars